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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,394	01/02/2002	Huw Bryn Jones	2011949	8389

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EXAMINER	
MOORE JR, MICHAEL J	

ART UNIT	PAPER NUMBER
2666	

DATE MAILED: 10/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/038,394	JONES, HUW BRYN	
	Examiner	Art Unit	
	Michael J. Moore, Jr.	2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7 and 8* is/are allowed.

6)☒ Claim(s) *1,2,4-6,9 and 10* is/are rejected.

7)☒ Claim(s) *3 and 11-16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 9/22/03 and 5/21/03 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statements.

Claim Objections

2. Claims **6, 9, 11, 13, and 16** are objected to because of the following informalities:

Regarding claim **6**, on line 3, the word "the" after word "measuring" should be "a".

Regarding claim **9**, on line 1, the word "the" after word "ranking" should be "a".

Regarding claim **11**, on line 1, the word "the" after word "controlling" should be "a". Also, on line 1, the word "the" before word "hop" should be "a". Lastly, on line 5, the word "the" before word "number" should be "a".

Regarding claim **13**, on line 1, the word "the" after word "controlling" should be "a". Also, on line 1, the word "the" before word "hop" should be "a". Lastly, on line 5, the word "the" before word "number" should be "a".

Regarding claim **16**, on line 11, there is a "period" after word "subset" that should be removed. Lastly, a "period" is missing at the end of this claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims **1, 2, and 4** are rejected under 35 U.S.C. 102(e) as being anticipated by Gendel et al. (U.S. 6,115,407) ("Gendel"). Gendel teaches all of the limitations of the specified claims with the reasoning that follows.

Regarding claim **1**, "selecting a hop sequence that is stored in each of the first and second transceivers comprised of a plurality of frequency channels over which the first and second transceivers communicate" is anticipated by the frequency-hopping pattern 250 (hop sequence) shown in Figure 2B composed of segments 0, 2, 5, 6, and 7 (plurality of frequency channels) spoken of on column 7, lines 60-67.

"Identifying a frequency channel in the hope sequence as being unsatisfactory" is anticipated by the detection of an occurrence of a reception error (unsatisfactory) over the used segments as spoken of on column 6, lines 34-43.

"Performing a frequency channel substitution by replacing the unsatisfactory frequency with an alternative frequency in the hop sequence of the second transceiver" is anticipated by the replacement of a used segment with an unused segment (alternate frequency) as spoken of on column 6, lines 38-43.

"Transmitting an unacknowledged substitution command a first time by the second transceiver requesting that the first transceiver perform the frequency channel substitution in its hop sequence" is anticipated by subsystem 300 (transceiver) of Figure

3 that transmits a replacement request (substitution command) to the other party requesting that the segment in error be replaced with an unused segment as spoken of on column 12, lines 36-39.

Lastly, "transmitting the unacknowledged substitution command a second time by the second transceiver requesting that the first transceiver perform the frequency channel substitution in its hop sequence" is anticipated by subsystem 300 (transceiver) of Figure 3 that retransmits a replacement request (substitution command) to the other party requesting that the segment in error be replaced with an unused segment as spoken of on column 12, lines 53-56.

Regarding claim **2**, "detecting an error in data communicated over the unsatisfactory frequency channel during two consecutive hops on that channel" is anticipated by the identified reception error occurrence pattern spoken of on column 10, lines 14-20.

Regarding claim **4**, "the step of transmitting the substitution command a second time occurs on the frequency channel in the hop sequence that immediately follows that during which the substitution command was transmitted the first time" is anticipated by subsystem 300 (transceiver) of Figure 3 that retransmits a replacement request (substitution command) to the other party requesting that the segment in error be replaced with an unused segment as spoken of on column 12, lines 53-56.

5. Claims **9 and 10** are rejected under 35 U.S.C. 102(b) as being anticipated by Souissi et al. (U.S. 5,809,059) ("Souissi"). Souissi teaches all of the limitations of the specified claims with the reasoning that follows.

Regarding claim **9**, "measuring the received signal strength on each of the spare frequency channels" is anticipated by the measurement of the signal strength for a sequence of channels as spoken of on column 2, lines 25-38.

Lastly, "ranking the spare frequencies in order of ascending received signal strength" is anticipated by the ranking of the sequence of channels in accordance with the detected signal strength measurements as spoken of on column 2, lines 25-38.

Regarding claim **10**, "the received signal strength on each spare frequency channel is measured sequentially through the set of spare frequency channels" is anticipated by the measurement of the signal strength for a sequence of channels as spoken of on column 2, lines 25-38.

"Determining whether the received signal strength on a particular spare frequency channel is less than that measured on a previous spare frequency channel ranked immediately above the particular spare frequency channel in the set of spare channels" is anticipated by the determining of a metric for each frequency pattern based on the received signal strength (SNR) as spoken of on column 7, lines 32-40.

Lastly, "switching the positions of the particular spare frequency channel and the previous spare frequency channel if the received signal strength on the particular spare channel is less than that of the previous spare channel" is anticipated by the using of the FH sequences in increasing order from best to worst sequence as spoken of on column 7, lines 40-44.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims **5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gendel et al. (U.S. 6,115,407) ("Gendel") in view of Souissi et al. (U.S. 5,809,059) ("Souissi").

Regarding claim **5**, Gendel teaches the method of claim **1**. Gendel does not teach ranking spare frequency channels by channel quality and selecting the highest-ranked spare frequency channel as the alternative frequency.

However, Souissi teaches measurement of signal strength for a sequence of channels as spoken of on column 2, lines 25-38 as well as ranking of the sequence of channels in accordance with the detected signal strength measurements as spoken of on column 2, lines 25-38. These references are considered to be analogous art in that they are both concerned with channel assignment in FHSS systems.

At the time of the invention, it would have been obvious to someone skilled in the art to combine the frequency ranking teachings of Souissi with the error substitution teachings of Gendel in order to provide a best available sequence of channels with the lowest average noise and interference level for future transmission as spoken of on column 5, lines 24-29 of Souissi.

Regarding claim **6**, Gendel teaches the method of claim **1**. Gendel does not teach measuring the received signal strength on spare frequency channels and ranking the spare frequency channels in order of ascending received signal strength.

However, Souissi teaches measurement of signal strength for a sequence of channels as spoken of on column 2, lines 25-38 as well as ranking of the sequence of channels in accordance with the detected signal strength measurements as spoken of on column 2, lines 25-38. These references are considered to be analogous art in that they are both concerned with channel assignment in FHSS systems.

At the time of the invention, it would have been obvious to someone skilled in the art to combine the frequency ranking teachings of Souissi with the error substitution teachings of Gendel in order to provide a best available sequence of channels with the lowest average noise and interference level for future transmission as spoken of on column 5, lines 24-29 of Souissi.

Allowable Subject Matter

8. Claims **7, 8, and 11-16** are allowable over the prior art of record.

9. Claim **3** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim **3**, Gendel teaches the method of claim **1**. Gendel also teaches dividing frequency channels into segments (subsets of channels) as shown in Figures 2A and 2B.

Gerten et al. (U.S. 6,760,319) teaches the permutation of a 79-hop bank of frequencies in Figure 6.

The prior art of record fails to teach the selection of a hop sequence comprised of channels from a first and a second subset of channels, such that two channels from a given subset are not adjacent to one another in the sequence.

Regarding claim **7**, Gendel teaches dividing frequency channels into segments (subsets of channels) as shown in Figures 2A and 2B.

Gerten et al. (U.S. 6,760,319) teaches the permutation of a 79-hop bank of frequencies in Figure 6.

The prior art of record fails to teach the selection of a hop sequence comprised of channels taken alternately from a first and a second subset of channels, such that no two channels from the same subset are adjacent to one another in the sequence.

Regarding claim **8**, this claim is further limiting to claim **7** and is thus also allowable over the prior art of record.

Regarding claim **11**, Gendel teaches the detection of an occurrence of a reception error (requires substitution) over the used segments as spoken of on column 6, lines 34-43. Gendel also teaches that when a number of detected errors of a used segment reaches or exceeds a threshold, the used segment is replaced with an unused segment as spoken of on column 6, lines 38-43.

Koprivica (U.S. 6,687,239) teaches a channel substitution method where if a channel quality of a channel fails to meet a threshold quality, that channel requires replacement as spoken of on column 3, lines 40-50.

The prior art of record fails to teach determining a congestion control value indicative of a number of frequency channels in the hop sequence that have been identified as requiring substitution, substituting the identified channel with an alternate channel when the value is less than a first threshold, and conveying the entire hop sequence over the link when the value exceeds the first threshold.

Regarding claims **12, 14, and 15,** these claims are further limiting to claim **11** and are thus also allowable over the prior art of record.

Regarding claim **13**, Gendel teaches the detection of an occurrence of a reception error (requires substitution) over the used segments as spoken of on column 6, lines 34-43. Gendel also teaches that when a number of detected errors of a used segment reaches or exceeds a threshold, the used segment is replaced with an unused segment as spoken of on column 6, lines 38-43.

Koprivica (U.S. 6,687,239) teaches a channel substitution method where if a channel quality of a channel fails to meet a threshold quality, that channel requires replacement as spoken of on column 3, lines 40-50.

The prior art of record fails to teach determining a congestion control value indicative of a number of frequency channels in the hop sequence that have been identified as requiring substitution, substituting the identified channel with an alternate

channel when the value is less than a threshold value, and shutting down the communications link when the congestion control value exceeds the threshold value.

Regarding claim **16**, this claim is further limiting to claim **13** and is thus also allowable over the prior art of record.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dent (U.S. 6,112,094) is another reference pertinent to this application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571) 272-3168. The examiner can normally be reached on Monday-Friday (8:30am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached at (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael J. Moore, Jr.
Examiner
Art Unit 2666

mjm MM

DANG TON
PRIMARY EXAMINER